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Tugas | GrafKom4

1. Diketahui titik awal P (1,1) dan titik akhir di Q (10,10), dengan cara area clipping xmin = 1, ymin=1, xmax=7 dan ymax=7. Selesaikan masalah ini dengan clipping cohensutherland
   Jawab:
   P (1,1)
   L = 0, $1 \geq$ x min
   R = 0, $1 \leq$ x max
   B = 0, $1 \geq$ y min
   T = 0, $1 \leq$ y min

   Region code P adalah 0000
   Q (10,10)
   L = 0, $10 \geq$ x min
   R = 1, 10 > x max
   B = 0, $10 \geq$ y min
   T = 1, 10 > y max

   Region code 0101
   Karena region code dari salah satu vertex P dan Q yang region codenya tidak 0000 maka garis PQ bersifat PARTIALY VISIBLE sehingga garis perlu dipotong.
   Titik potong garis PQ
   Region code Q adalah 0101, R = 1 dan T = 1
   $m = \frac{y_2 - y_2}{x_1 - x_2} = \frac{10 - 1}{10 - 1} = \frac{9}{9} = 1$

   $R = 1 \rightarrow y_{p2} \rightarrow y_1 + m * (x\ max - x_1)$
   $1 + 1(10 - 1)$
   $2 + 9$
   11
   Maka titik potongnya $(xmax, y_{p2}) \rightarrow (10,11)$
   T = 1
   $m = \frac{y_2 - y_2}{x_1 - x_2} = \frac{10 - 1}{10 - 1} = \frac{9}{9} = 1$
   $T = 1 \rightarrow x_{p1} = x_1 + \frac{y_{min} - y_1}{m}$

$= 1 + \frac{1-1}{1} = \frac{1+0}{1}$

$= \frac{1}{1} = 1 \rightarrow x_{p1} = 1$

Maka titik potongnya adalah (x_{p1} ,ymin) = (1,1)

2. Berdasarkan soal no.1 lakukan clipping menggunakan alogaritma Liang-Barsky dimana xl=1, xr=7, yb = 1, yt= 1
   Jawab :

   Diket:
   - xl=1
   - xr=7
   - yb = 1
   - yt= 1
   - P = (1, 1)
   - Q = (10, 10)

   Dijawab:

   → dx = $x_2 - x_1$
   = 10 -1 = 9
   → dy = $y_2 - y_1$
   = 10 -1 = 9

   P_1 = -dx = -9 Q_1 = $x_1 - xl$ = 1 – 1 = 0
   P_2 = dx = 9 Q_2 = $xr - x_1$ = 7 – 1 = 6
   P_3 = -dy = -9 Q_3 = $y_1 - yb$ = 1 – 1 = 0
   P_4 = dy = 9 Q_4 = $yt - y_1$ = 7 – 1 = 6

   - $\frac{Q_1}{P_1} = \frac{0}{-9} = 0$
   - $\frac{Q_2}{P_2} = \frac{6}{9} = \frac{2}{3}$
   - $\frac{Q_3}{P_3} = \frac{0}{-9} = 0$
   - $\frac{Q_4}{P_4} = \frac{6}{9} = \frac{2}{3}$
   - Untuk (P_1 <0> T_1 = “max” (0,00)
     = 0
   - Untuk (P_1 >0> T_2 = “min” $\left(\frac{2}{3}, \frac{2}{3}, 1\right)$
     = $\frac{2}{3}$

$T_1 < T_2$

- $T_1 = 0$

  $X_1 = x_1 + dx(T_1)$

  $= 1 + 9(0) = 1$

  $Y_1 = y_1 + dy(T_1)$

  $= 1 + 9(0) = 1$

  $(x_1, y_1) \rightarrow (1, 1)$

- $T_2 = 2/3$

  $X_2 = x_2 + dx(T_2)$

  $= 1 + 9(2/3) = 7$

  $Y_2 = y_2 + dy(T_2)$

  $= 1 + 9(2/3) = 7$

  $(x_2, y_2) \rightarrow (7, 7)$